



SPLIT TYPE WALL MOUNTED AIR CONDITIONER

Service Manual

AA-2119

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Technical Data

1. Range & Conditions

1.1 Operating Range

Operating Modes	Temperature	Indoor Temperature	Outdoor Temperature
Cooling	Max.	32°C DB/23°C WB	43°C DB
	Min.	21°C DB/15°C WB	21°C DB

1.2 Operating Conditions

	Rated Operating Conditions	
	Indoor Temperature	Outdoor Temperature
Cooling	27°C DB/19°C WB	35°C DB/24°C WB
Tubing Length (m)	4.0	
	Max. Operating Value	
	Indoor Temperature	Outdoor Temperature
Cooling	32°C DB/23°C WB	43°C DB
Tubing Length (m)	4.0	

DB: Dry-bulb temperature

WB: Wet-bulb temperature

2. Specifications

2.1 Unit Specifications

Rated voltage & Power			220V/ 60Hz (single phase)	
Performance			Cooling	
	Rated capacity	Btu/h	9000	
	Air circulation (High)	m³/h	420	
	Moisture removal (High)	L/h	1.1	
Electrical rating			Cooling	
	Voltage range	V	198~242	
	Operating current	A	4.80	
	Power input	W	1000	
	E.E.R	W/W	2.64	
Features				
	Controls / Temperature control		Microprocessor / I.C thermostat	
	Control unit		Infrared remote control transmitter KK22B	
	Timer		OFF 8 hours	
	Fan speed	Indoor /Outdoor	High, Medium, Low, Auto / Auto (single speed)	
	Airflow direction	Horizontal	Manual	
		Vertical	Remote control	
	Air filter		Anti-mold, washable	
	Compressor		Rotary-type (Hermetic)	
	Refrigerant /g		R22 /550	
	Refrigerant control		Capillary tube	
	Noise	Indoor dB-A	39	
		Outdoor dB-A	50	
	Pipeline connection manner		Flare	
	Max. pipeline length m		9.0	
	Refrigerant tubing diameter (in)	Narrow tube mm	6.35 (1/4")	
		Wide tube mm	9.52 (3/8")	
Dimensions & Weight			Indoor unit	Outdoor unit
Unit dimensions	Height	mm	245	430
	Width	mm	760	600
	Depth	mm	183	245
Package dimensions	Height	mm	305	515
	Width	mm	845	735
	Depth	mm	253	340
Weight	Net weight	kg	7.5	22
	Gross weight	kg	9.5	26

Data subject to change without notice

2.2 Specifications of main parts

2.2.1 Indoor unit

		AA-2119
Controller		CHZ22G/M1S or CHZ22G/M1S-K
	Part No.	CHZ25G/YS
	Controller	Microprocessor
	Fuse	T3.15A, 250V
Remote controller		KK22B-C1 (English status)
Fan & Fan motor		
	Type	Cross-flow fan
	Quantity / Diameter / Length mm	1/ ϕ 97/583
	Fan motor model	RPS19H-8(Welling)
	Pole / Rotation of motor (rpm, 220V High speed)	4/1260
	Coil resistance	Grey-White: 507
	Ambient temp 20℃ Ω	White -PINK: 85.5
	Operating capacitor	1 μ F / 450 VAC
Front panel motor		
	Type	Step motor
	Model	24BYJ48-Q1
	Rated voltage (d.c.) V	12
	Coil resistance (Ambient temp 25℃) Ω	300 Ω ± 7%
Heat exchanger		
	Fin	Aluminum fin / Copper tube
	Rows	1.5
	Fin pitch mm	1.5
	Face area m ²	----

Data subject to change without notice

2.2.2 Outdoor unit

Compressor			
Type			Rotary(Hermetic)
Compressor model			Huarun: C-1RT142H01AA
Compressor power input	W		985
Compressor oil / Amount	CC		SAY-56T/ 350
Overload protector (external)			B240-155-241E
Compressor locked rotor amperes	A		24
Coil resistance (Ambient temp 20℃)		Ω	C-R: 2.75 C-S: 4.55
Operating capacitor		μ F	25
		VAC	450
Fan & Fan motor			
Type			Propeller fan
Amount / Diameter	mm		1/ φ 320
Fan motor model			Welling:YDK36-6D-5
Pole / Rotation of motor (220V,High speed)	rpm		6...990
Rated power output	W		36
Coil resistance (Ambient temp 20℃)		Ω	White – Gray: 202 Brown–White:134
Safety device	Type		Internal protector
	Operating temp	Open °C	130±8
		Close °C	90±15
Operating capacitor		μ F	2.5
		VAC	450
Heat exchanger			
Fin			Aluminum fin / Copper tube
Rows			1.0
Fin pitch	mm		1.6
Face area	m ²		----
External coating			Powder-spraying coating

Data subject to change without notice

2.3 Specifications of other parts

Indoor unit

Transformer (TR)	DB48-220-A2214
-------------------------	----------------

Thermal resistor	KTM-41-C9(Copper), KTEC-41-C12(Plastic)			
Resistance(K Ω)	0℃	32.97K Ω	10℃	20.00K Ω
	20℃	12.51K Ω	25℃	10.00K Ω
	30℃	8.048K Ω		

Power supply	JUZ6.604.270
	16A/ 250Va.c

Power relay (PR)	G4A-1A-E 12VDC Or JQX-102F-012	JZC-32F-012-1H1
Coil rated voltage	12V d.c	12V d.c
Coil resistance Ω (20℃)	200 Ω	300 Ω

Data subject to change without notice

3. Control Specifications

3.1 System source

3.1.1 Signal input

Temperature sensor signal (indoor temperature $-35\sim 130^{\circ}\text{C}$, indoor coiled temperature $-35\sim 130^{\circ}\text{C}$, outdoor coiled temperature $-35\sim 130^{\circ}\text{C}$ (optional)); remote control signal; emergency switch input; (capacity, heating or cooling) input.

3.1.2 Signal output

Display signals (SI, SCK, RCK or air refresh, operation, pause, timer); louver motor (1a, 1b, 1c, 1d); indoor fan speed (high, medium, low) output, AUH, air refresh, buzzer, compressor, outdoor fan motor, 4-way reversing valve and other assistant functions.

3.2 Control functions

3.2.1 Switches input

Press the Emergency button on the panel when the air conditioner is in the off mode, then the unit will be turned on and work in the "SMART" mode. Press this button again when the unit is running (including test run or in "SMART" mode), the air conditioner will be turned off.

Note:

All the displaying will disappear when turn off the air conditioner by pressing the Emergency button.

3.2.2 Timing off

"Timing off " function is only effective when the air conditioner is running. The indoor unit will display " TIMING" when this function is effective. The unit will be turned off at the set time and " TIMING" signal will disappear. When the user turn off the unit ahead of the set time by remote controller or Emergency button, the "Timing off" function will be canceled.

Note: The set time for Timing off is 1-8 hours.

3.2.3 Sleep mode

When the sleep mode is set, the set temperature will increase 1°C after running 1 hour in cooling or Dehumidifying mode. Temperature will decrease 1°C after running 1 hour in heating mode.

Note: Display set temperature is unaltered

When the air conditioner runs in sleep mode, the Max. indoor fan speed is set at medium level.

Note: The fan speed is set to be at low level, but the fan speed will turn into medium level when in freeze-prevention mode.

3.2.4 Blowing surplus energy function

The indoor unit will continue run in low fan speed no longer than 30 seconds after the unit is turned off when in the heating operation. (Note: Except the AUH blows surplus energy function, the unit will stop blowing surplus energy when the temperature of tube is below 35°C.)

3.2.5 Operation for dryness enzyme-prevention

When the unit is turned off in cooling mode, the indoor unit will continue run in low fan speed for about 3 minutes to remove the partial moisture in the room.

3.3 Operating mode

3.3.1 SMART operation

The unit will judge the operation mode automatically after receiving the SMART signal.

3.3.1.1 When $Tr \geq 24^{\circ}\text{C}$, turns on the unit in the original condition, the unit will turns into cooling mode.

When $20^{\circ}\text{C} < Tr < 24^{\circ}\text{C}$, the unit will turns into airflow mode.

When $Tr \leq 20^{\circ}\text{C}$, the unit will turns into heating mode.

In airflow mode, when in the condition that it is necessary for cooling or heating more than 1 minute, the unit will turn into cooling or heating mode.

3.3.1.2 The fan speed is at auto mode and adjustable, the display will change accordingly.

Note: If choosing the airflow mode, the auto airflow is set to be at low level automatically.

3.3.1.3 The airflow direction is swing and adjustable, and the display will change accordingly.

3.3.1.4 All output (air refresh, AUH, air ventilate, etc.) is effective.

3.3.1.5 In cooling mode, the original set temperature is $T_s = Tr - 5^{\circ}\text{C}$ and $22^{\circ}\text{C} \leq T_s \leq 27^{\circ}\text{C}$, then the master unit will not change operation mode when the unit enters into cooling mode.

If users want to change working condition by remote controller, in case the condition will not conflict with the master unit mode, (such as cooling mode conflicts with AUH mode), the master unit will operate and display in new condition set by remote controller.

3.3.2 Cooling

Temperature control range: $16^{\circ}\text{C} - 32^{\circ}\text{C}$; Original value: 24°C ;

Temperature control precision: $\pm 1^{\circ}\text{C}$;

Characters on control:

4-way reversing valve closes:

When $Tr \geq T_s + 1^{\circ}\text{C}$, compressor runs; When $Tr \leq T_s - 1^{\circ}\text{C}$, compressor stops; The control circuit will stop compressor only after it has run at least 5 minutes. The compressor can be restarted 3 minutes later the turn-off.

Fan speed control:

Auto: When $Tr > T_s + 2^{\circ}\text{C}$, high speed;

When $T_s < Tr \leq T_s + 2^{\circ}\text{C}$, medium speed;

When $T_r \leq T$, low speed.

Manual: Users can select the fan speed of high, medium or low level as needed when the air conditioner is in the turn-on status.

Louver adjustment:

Manual (vertical direction): Set the blades position as needed. (Position 1-5 in figure 1.)

Auto (vertical direction): The range of sweeping is in position 2-5, swinging speed is 5 degree/second.

3.3.3. Dehumidification

Temperature control range: 16°C - 32°C ; Temperature control precision: $\pm 1^{\circ}\text{C}$;

Characters on control:

4-way reversing valve closes.

When $T_r \geq T_s + 2^{\circ}\text{C}$, the running mode is the same to the cooling operation;

When $T_s - 1^{\circ}\text{C} < T_r < T_s + 2^{\circ}\text{C}$, compressor and outdoor fan motor run continuously. And indoor fan motor runs at low fan speed

When $15^{\circ}\text{C} < T_r < T_s - 1^{\circ}\text{C}$, compressor and outdoor fan motor are working according to 3 minutes working alternating with 9 minutes stopping. Indoor fan motor runs at low fan speed when compressor is running, and it runs at breeze level for 30 seconds later the turn-off of compressor. 30 seconds later, fan motor will turn off.

When $T_r \leq 15^{\circ}\text{C}$, indoor and outdoor fan motor will stop running, louver blades (vertical direction) can't be controlled.

Note: Among four dehumidification modes, if users want to change running condition, then the unit must run for at least 3 minutes or in off-status for at least 3 minutes.

Louver adjustment (vertical direction): The range of sweeping is in position 2-5, the fan speed is 5 degree/second.

3.3.4. Heating (not available for cooling-only type air conditioner)

Temperature control range: 16°C - 32°C ; Original value: 24°C ;

Temperature control precision: $\pm 1^{\circ}\text{C}$;

Characters on control:

4-way reversing valve opens.

When $T_r \leq T_s - 1^{\circ}\text{C}$, compressor, 4-way reversing valve and outdoor fan motor all open.

When $T_r \geq T_s + 1^{\circ}\text{C}$, compressor and outdoor fan motor both close; Indoor fan motor is running at low level.

When T_{rc} (T_{rc} : The indoor coiled temperature) $< F^{\circ}\text{C}$, the air conditioner will enter into cool-airflow-prevention operation, the PAUSE indicator will light.

indoor Fan motor control:

Manual: Users can select the fan speed of high, medium or low level as needed.

Auto: When $T_r < T_s - 2^{\circ}\text{C}$, high speed; When $T_r \geq T_s - 2^{\circ}\text{C}$, medium speed;

Louver adjustment:

Manual (vertical direction): Set the blades position as needed. (Position 1-5 in figure 1.)

Auto (vertical direction): The range of sweeping is in position 1-4, fan speed is 5

degree/second.

Compressor control:

The control circuit will stop compressor only after it has run at least 5 minutes. Compressor can be restarted 5 minutes later the turn-off.

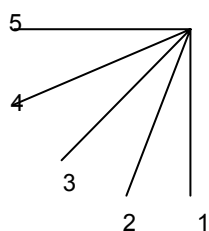


Fig.1

3.4 Protection function

3.4.1 Delay-starting protection for the compressor

Compress will restart working 3 minutes(5 minutes in HEAT mode) later the turn-off of compressor or power-off to keep the pressure balance of the cooling system.

3.4.2 Freeze-prevention: To prevent indoor heat exchanger freezing in cool and dry operation.

When $Trc \leq 3^{\circ}\text{C}$ for 2 minutes, the air conditioner will enter freeze-prevention operation. If indoor fan speed is at low or breeze level, it will turn to medium speed automatically; if indoor fan speed is at medium speed, it will turn to high speed; The air conditioner will exit Freeze-prevention operation when $Trc > 8^{\circ}\text{C}$, indoor fan motor runs at the set fan speed. Compressor will stop running when it runs at least 10 minutes and $Trc \leq -2^{\circ}\text{C}$. If the off-time of compressor is for more than 6 minutes or $Trc \geq 8^{\circ}\text{C}$, and the compressor stops running for more than 3 minutes. Compressor and outdoor fan motor will restart working. The air conditioner will exit Freeze-prevention operation, and indoor fan motor is running at the set speed.

Note: When entering Freeze-prevention operation, users can adjust louver position, fan speed, the set temperature.

3.4.3 Dew- prevention (cooling&dehumidification mode)

When the louver blades are at the position 5 as shown in Fig.1 for at least 15 minutes, the blades will come back to 4 position automatically(if in the 1 position, it will come back to 2 position) and the blades will come back to the original position.(Note: There would be no dew-prevention when at high airflow level.

3.4.4 Cool-airflow-prevention: (not available for cooling-only type air conditioner)

In heating operation, compressor do not work longer than 5 minutes.

- A. If $Trc < F^{\circ}\text{C}$, inner fan motor will stop.
- B. $F^{\circ}\text{C} < T$, pipe temp. $\leq 36^{\circ}\text{C}$, the indoor fan motor will run at low speed.
- C. T pipe temp. $> 36^{\circ}\text{C}$, the indoor fan motor will run at set speed.

Note: As long as comes into A condition, the unit will not enter A condition even if temp.

drops. As long as comes into C condition, the unit will not enter B condition even if temp. drops. Louver blades will come to 5 position automatically and not controllable. During cool-airflow-prevention period, pause (red) indicator will light.

3.4.5 Heating overload working

(not available for cooling-only type air conditioner)

When $Trc \geq A^{\circ}C$, the unit enters heating overload protection. If indoor fan speed is set at low or breeze level, it will turn to medium speed automatically; if indoor fan speed is set at medium speed, it will turn to high speed; When $Trc \geq B^{\circ}C$, outdoor fan motor stops. When indoor pipe temp. drops to $D^{\circ}C$, outdoor fan motor will restart working. Air conditioner will exit overload protection when Trc drops to $E^{\circ}C$, compressor restarts working, Indoor fan motor runs at the set fan speed.

When $Trc \geq C^{\circ}C$ and the build-up time of compressor running is for more than 5 minutes, compressor will be stopped.

Note: When entering heating overload operation, users can adjust louver position, fan speed, and the set temperature.

3.4.6 Defrosting: (not available for cooling-only type air conditioner)

3.4.6.1 Defrost entry conditions

Judge defrosting condition after the compressor running for more than 10 minutes.

Defrost entry conditions for the unit with outdoor pipe temp. sensor

- A. Indoor unit enters overload prevention and outdoor unit stops. When outdoor fan motor runs for more than 10 minutes, and the build-up time of compressor running is for more than 50 minutes, $Trc \leq A-1^{\circ}C$ and $Toc \leq -2^{\circ}C$ (Toc : The outdoor coil temperature.)
- B. Not overload, but $Toc \leq -17^{\circ}C$ for 30 seconds. The build-up time of compressor running is for more than 25 minutes.
- C. The build-up time of compressor running is for more than 3 hours. And $Toc \leq -2^{\circ}C$ for 5 minutes. $Trc \leq G-2^{\circ}C$ and $Trc \leq (Tr+H)^{\circ}C$.
- D. The build-up time of compressor running is for more than 1.5 hours. And it reaches the condition of the unit stopping. Toc drops below $-2^{\circ}C$ for 3 minutes (overload). or $Toc \leq -2^{\circ}C$ and $Trc \leq G+2^{\circ}C$ (not overload).
- E. The build-up time of compressor running is for more than 50 minutes. $Toc \leq -2^{\circ}C$, Trc drops at least $3^{\circ}C$ and $Trc \leq G^{\circ}C$, $Trc \leq (Tr+H)^{\circ}C$.
- F. $Toc \leq -2^{\circ}C$, the temperature decreases $1^{\circ}C$ every 6 minutes (repeat for 3 times). The build-up running time is for more than 25 minutes.

Defrost entry conditions for the unit without outdoor pipe temp. sensor

- A. Indoor unit enters overload prevention and outdoor unit stops. When outdoor fan motor runs for more than 10 minutes, and the build-up time of compressor running is for more than 50 minutes, indoor pipe temp. is below $L^{\circ}C$.
- B. When the build-up time of outdoor fan motor is more than 3 hours, and indoor pipe temp. is below $I^{\circ}C$.

- C. When arriving at off condition, the build-up time of compressor is more than 1.5 hours, and indoor pipe temp. is below $M^{\circ}\text{C}$. (below $N^{\circ}\text{C}$ when in overload protection)
- D. The build-up time of compressor is more than 50 minutes, Trc drops more than 3°C and $\text{Trc} \leq I^{\circ}\text{C}$, $\text{Trc} - \text{Tr} \leq K^{\circ}\text{C}$;
- E. When not overloading, Trc drops 1°C every 6 minutes and repeat 3 times continuously, the build-up time of compressor is more than 25 minutes.

Users can defrost as long as the unit meet one of the above condition.

3.4.6.2 Defrosting

Compressor, indoor and outdoor fan motor will stop working after the unit entering defrosting running. 5 5seconds later, 4-way reversing valve will close. Another 5 seconds, compressor starts running. When the time of the compressor running is for more than 8 minutes or $\text{Toc} \geq 20^{\circ}\text{C}$, and defrosting time is at least for 3 minutes, Compressor stops. 55 seconds later, 4-way reversing valve will open. Another 5 seconds later, compressor and outdoor fan motor will restart working and exit defrosting operation. In defrosting operation, the time of compressor running is at least 3 minutes. Cool-airflow-prevention and blowing residue heat are both effective.

3.4.7 Testing codes

- code 1: to set test run; code 2: to set fast testing;
 - code 3: to set auto-diagnosis; code 4: to cancel the above setting;
- There only can be one setting each time in the tests above.

3.4.8 Temperature and failure code display

- A. The defining of code refers to the following:
 - Code 11: room temperature code 12: indoor coil pipe temperature
 - Code 13: outdoor coil pipe temperature
- B. Code 14: abnormal information
 - E0: Normal operation P2: Heating overload
 - F1: The circuit of room temperature sensor is damaged or abnormal
- C. The circuit of room temperature sensor is abnormal---Pause light flashes and the unit stops.
- D. The circuit of pipe temperature sensor is abnormal---Timer light flashes and the unit can not run in heating mode.
- E. When outdoor pipe temp. sensor is failure Defrost entry conditions for the unit without outdoor pipe temp. sensor .

3.5 Other functions

3.5.1 Auto-diagnosis

The Auto-diagnosis functions are in the following steps when the power is turned on.

Buzzer beeps 1s → Running compressor on 0.5s → Running outdoor fan on 0.5s → 4-way reversing valve 0.5s → AUH 0.5s → low fan speed on 0.5s → medium fan speed on

0.5s → high fan speed on 0.5s → step motor for louver(1a,1b,1c,1d)on 0.5s→no output for 0.5s → output for 0.5s→ Buzzer beeps 1s →

During the period of auto-diagnosis, LED display screen is light all the time.

During the period of auto-diagnosis, buzzer will keep beeping if temperature sensor is abnormal.(except outdoor temperature sensor)

3.5.2 Timer saving:

The master controller CPU runs as 61 times as the former speed. (there is no timer saving function within 1 minute)

3.5.3 AUH

A. Starting conditions for AUH

- a. Receive starting AUH signals from remote controller.
- b. In the heating mode.
- c. The build-up time of compressor is more than 1 minute.
- d. $T_r \leq 18^{\circ}\text{C}$
- e. $T_s - T_r \geq 3^{\circ}\text{C}$
- f. Indoor fan motor is running at medium or high level.

B. The AUH function will be closed when meets any of the following conditions:

- a. $T_s - T_r \leq 2^{\circ}\text{C}$
- b. $T_{rc} \geq A-2$
- c. Indoor fan motor stops running or runs at low level.
- d. Entering defrost running.
- e. Receive signals for closing AUH from remote controller.

Note: If AUH stops working because of condition b, users can restart AUH only on condition that pipe temp. $\leq D-1^{\circ}\text{C}$ and meet all conditions in A.

C. Defrost when AUH is in operation

If AUH is in operation or less than 10 minutes after closing, indoor fan will continue running at low level for 30 seconds when entering defrosting.

D. Switch off unit when AUH is in operation.

If AUH is in operation or less than 10 minutes after closing, indoor fan will continue running at low level for 30 seconds when switching off. The other things are the same to the condition when switching off normally.

3.5.4 LCD display

The LCD doesn't display symbols if air conditioner is in off status, but in the checking and setting conditions, the LCD will also display the corresponding state of the unit.

Turn on the master unit, the LCD only display run indicator after 30 seconds. The LCD will display all setting if remote control signal is received again, and only display run indicator after receiving the last signal from remote controller 30 seconds later.

3.5.5 Air refresh function(not available for type A)

Press air refresh button when the unit is in off status, the unit will switch on. Indoor fan motor runs at the set fan speed, air refresh output. When air refresh function is turned off,

the unit will turn back to the original mode. Press air refresh button if Air conditioner is running, air refresh will be functioned and the indicator will light

3.5.6 Quiet Operation

Press air refresh button when air conditioner is in off status and set fan speed as quite mode, the indoor fan will run at breeze;

In other status, the indoor fan runs at breeze.

3.5.7 Restoration function (optional)

To install E²PROM, users do not have to program and assemble. As long as installing E²PROM, the unit will have the restoration function after electricity comes again.

3.5.8 The second function button

The second function for "AIR REFRESH" button:

Press "AIR REFRESH" button and hold on, and finish the test condition after 5 seconds. When entering this mode, the original display is 0 for each entry. The second function is only effective for temperature control button, on/off button, and air refresh button. Other buttons are not effective for the second function.

The second function for "AUH" button:

Press "AUH" button and hold on for 5 seconds, the unit will enter dew-prevention function. At the same time, the unit gives a buzz sound. This button is only effective in cooling and heating mode. Users can set or cancel this function by press this button.

3.6 Parameter table

Temperature table of protecting point

MODEL	A	B	C	D	E	F	G	H	I	J	K	L	M	N
AA-2119	49	52	65	44	42	32	36	24	48	37	19	48	39	48

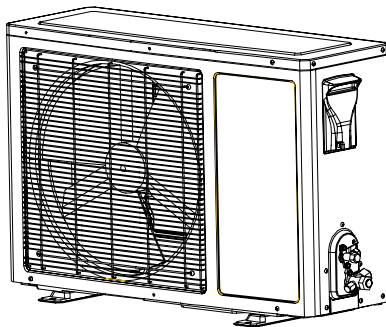
The type of remote controller for cooling-only air conditioner is KK22B-C1.

4. Dimensional Data

Indoor unit

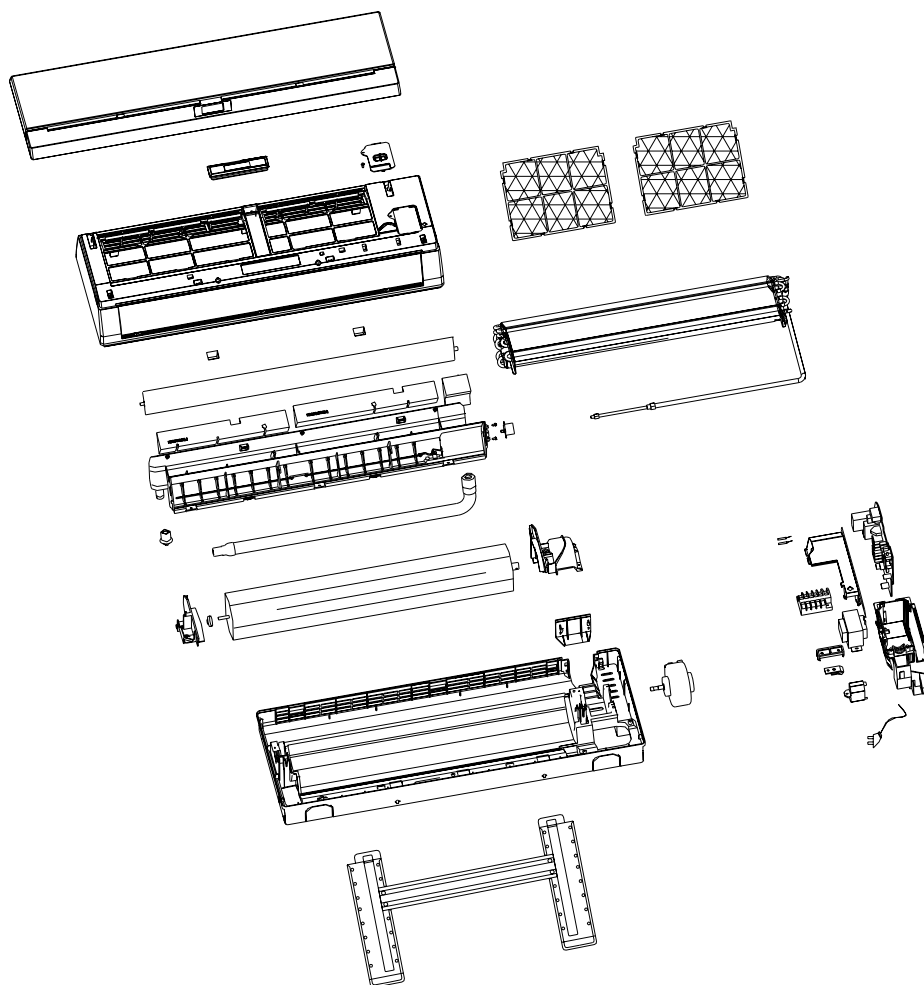


Outdoor unit

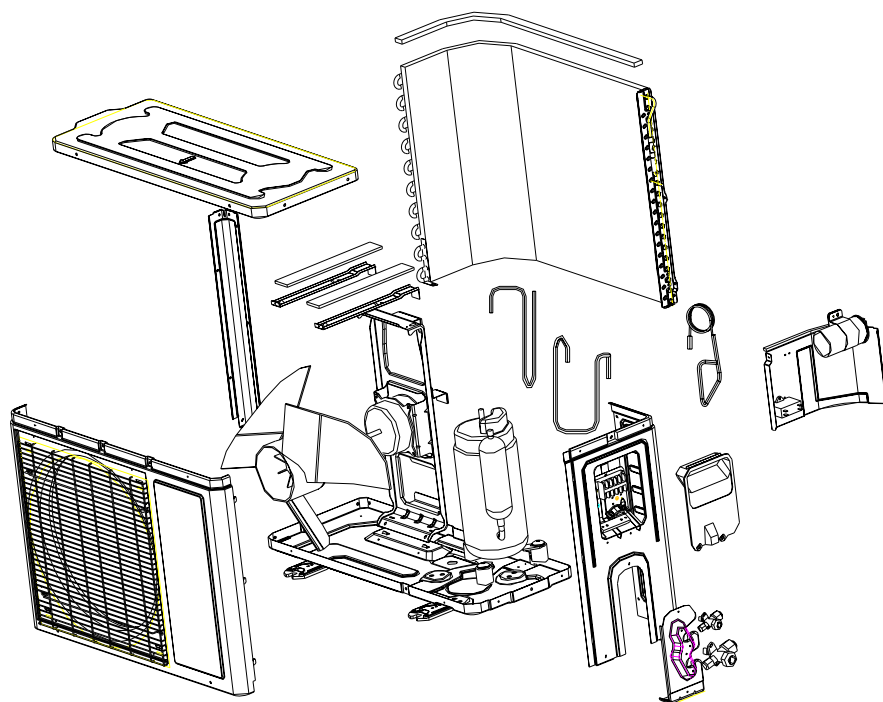


The above figures are only schematic, and they may be slightly different from the actual appliances you bought.

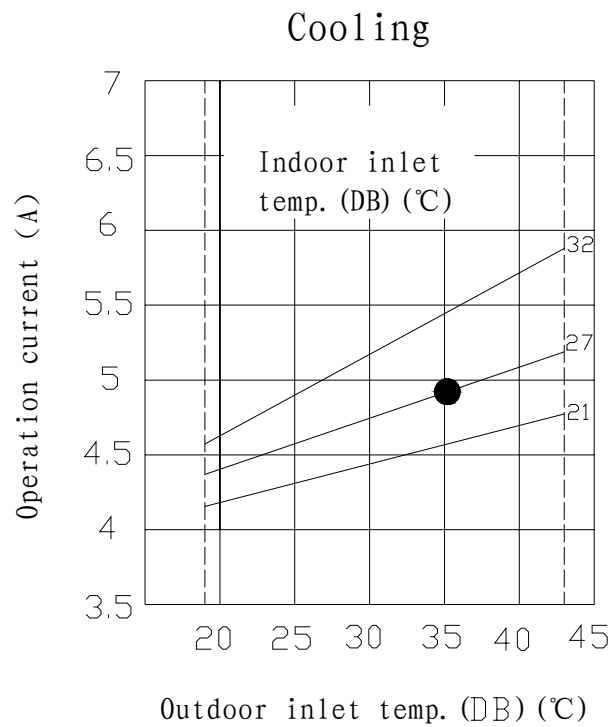
Exploded view for indoor unit



Exploded view for outdoor unit



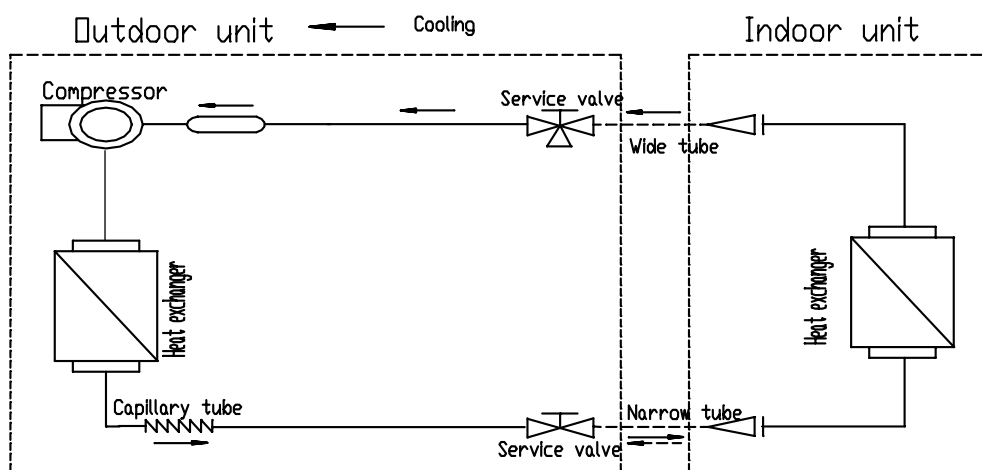
5. Performance Charts



Note:

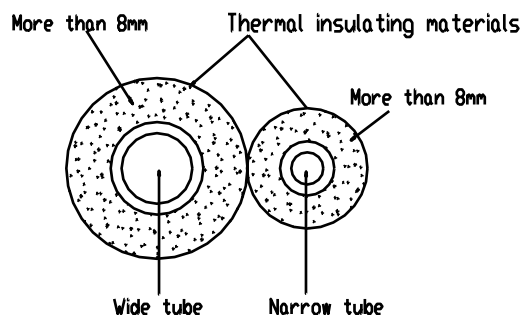
- Points of rated operating conditions

6. Refrigerant Flow Diagram



Thermal insulating of refrigerant pipeline

To prevent heat loss and condensed water from dropping on the floor, the wide and narrow tube of air conditioner should be wrapped with thermal insulating materials. For using capillary tube, and the tubes are in low temperature, the thickness of thermal insulating materials shall be more than 8 mm.



Narrow tube	Φ6.35 mm(1/4")
Wide tube	Φ9.52 mm(3/8")

Warning

Outdoor Wiring Diagram

The diagram illustrates the outdoor wiring for a unit. At the top, a horizontal line represents the main power supply, with an arrow pointing to the right labeled "To indoor unit". Below this line are three terminals: "1", "2(N)", and a ground symbol (⊕).
From terminal "1", a "RED" wire runs down to a "PROTECTOR" (represented by a circle with a diagonal line). Below the protector is a "YELLOW/GREEN" ground wire connected to a ground symbol. The wire continues down to a "CM" (Compressor Motor) symbol, which is a circle with a tilde (~) inside. The wire is labeled "RED" near the protector and "RED" near the CM.
From terminal "2(N)", a "GRAY" wire runs down to a switch symbol. Below the switch is a "WHITE" wire that runs down to the "CM" motor. The switch is labeled "GRAY" and "WHITE".
A "GRAY" wire also runs from the switch area down to a second switch symbol. Below this switch is a "WHITE" wire that runs down to a "FAN MOTOR" symbol (a circle with a tilde (~) inside). The switch is labeled "GRAY" and "WHITE".
A "GRAY" wire runs from the switch area down to a "BROWN" wire, which then runs down to the "FAN MOTOR". The switch is labeled "GRAY" and "BROWN".

Note: To different compressors, the protector may be placed in or out of the compressor.

Indoor Wiring Diagram

The diagram illustrates the indoor wiring for a system, centered around the **Main Control Panel**. The components and their connections are as follows:

- Evaporator:** A 6-pin terminal block with terminals 1, 2 (N), 3 (⊕), 4, 5, and 6 (L). Wires connect to these terminals: Yellow/Green (ground), White (to LED), Green (to Fan Motor), Black (to Fan Motor), Red (to Fan Motor), Blue (to Fan Motor), and Brown (to Fan Motor).
- LED (XS201):** A 6-pin terminal block connected to the White wire from the Evaporator and the 6&7 terminal of the Main Control Panel.
- Fan Motor:** A 7-pin terminal block with terminals 1 (Pink), 2 (Brown), 3 (Gray), 4 (White), 5 (White), 6 (Violet), and 7 (Ora). It is connected to terminals XS109 through XS107 of the Main Control Panel.
- Step motor:** A 5-pin terminal block with terminals 1 through 5, connected to terminals XS118 through XS114 of the Main Control Panel.
- Thermister:** A 2-pin terminal block connected to terminals XS115 and XS116 of the Main Control Panel.
- Copper:** A 2-pin terminal block connected to terminals XS115 and XS116 of the Main Control Panel.
- Transformer (Maybe be cancelled):** A transformer with terminals 1, 2, 3, and 3. It is connected to terminals XS111, XS110, XS111, and XS110 of the Main Control Panel.
- Main Control Panel:** A central unit with multiple terminal blocks (XS102, XS109-XS107, XS118-XS114, XS115, XS116, XS111, XS110) and internal components like K108 and XS119.

8. Troubleshooting

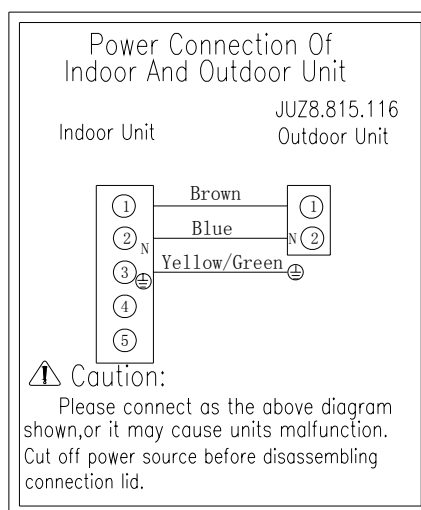
8.1 Check before troubleshooting

Warning:

High-voltage will result in electric shock or death.
Always cut off the power before checking and maintaining.

8.1.1 Check power line

To check whether the power line is connected correctly to the terminal No 1 which is on the terminal block of the indoor unit



8.1.2 Check unit wiring

To check whether the inter-unit wires are connected correctly.

8.1.3 Check power supply

To check whether the power supply is in the specified range (220-240V).

8.1.4 Check connector and lead wire of indoor and outdoor units.

To check whether the insulating cover of the lead wire is damaged.

To check whether the lead wire and the connector are connected well

To check wires.

8.2 The air conditioner does not work

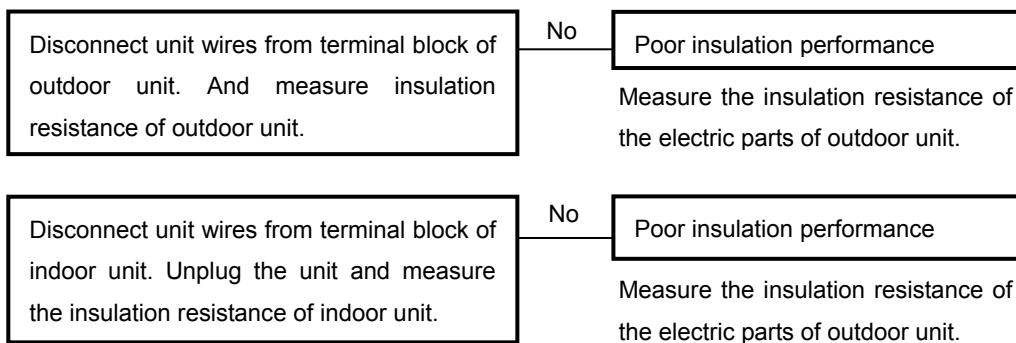
8.2.1 Leakage protector is open or fuse is burnt.

A. Setting leakage protector to "ON", it opens immediately (can not reset).

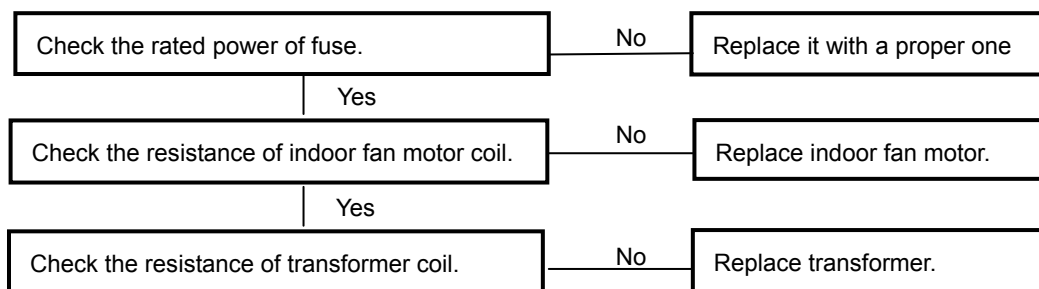
There is possibility of ground fault.

Check insulation resistance (The insulation resistance shall be more than $2M\Omega$).

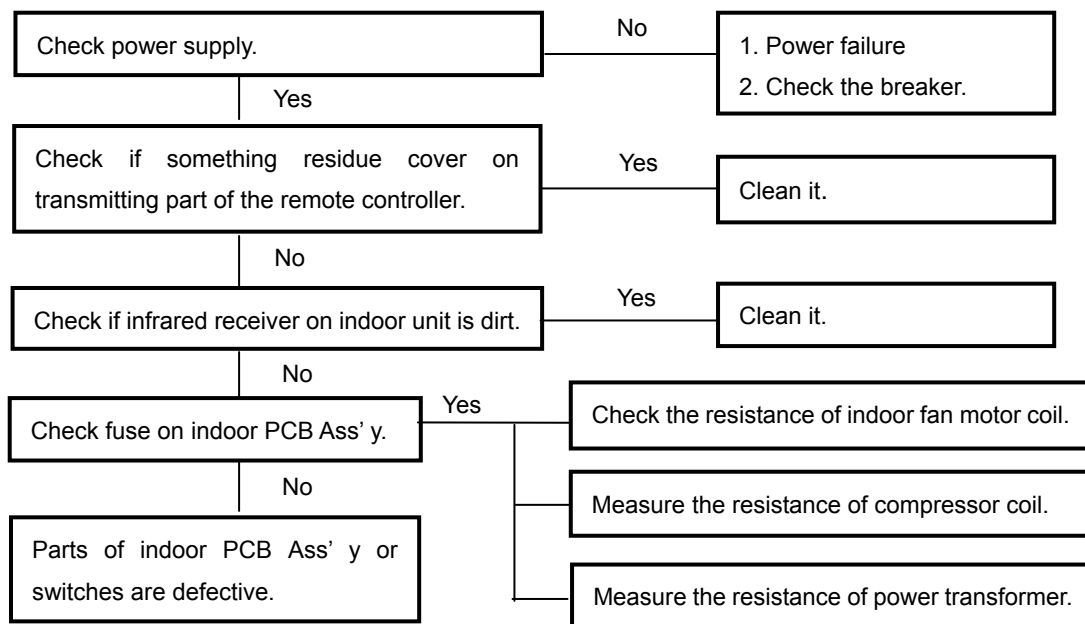
B. Leakage protector is **OFF**.



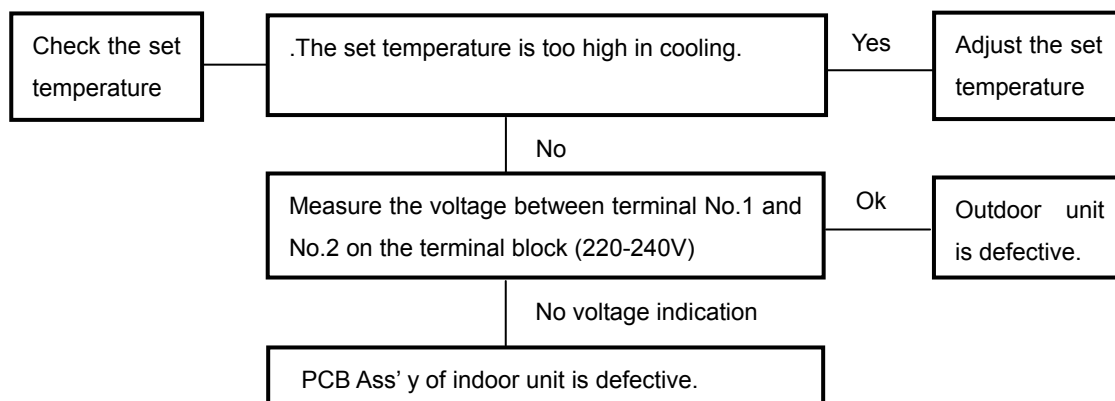
C. The fuse is open in several minutes after turning air conditioner on.



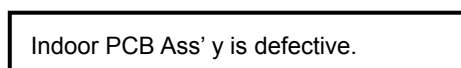
8.2.2 The indoor and outdoor units do not work.



8.2.3 Only outdoor unit does not work.

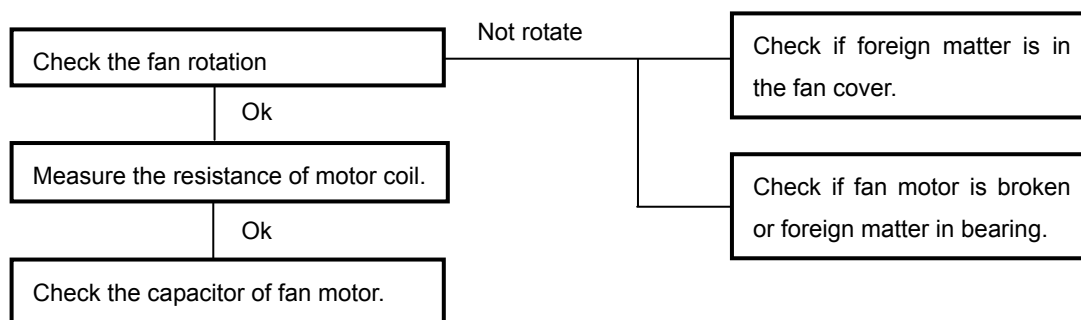


8.2.4 Indoor unit does not work.

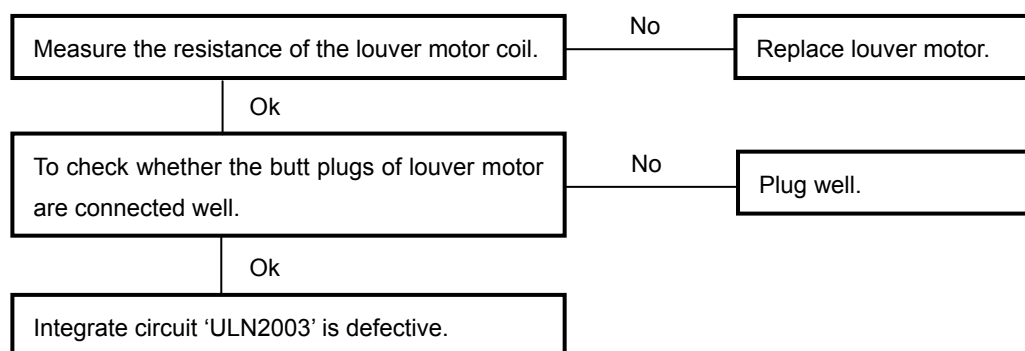


8.3 Some parts of the air conditioner do not work

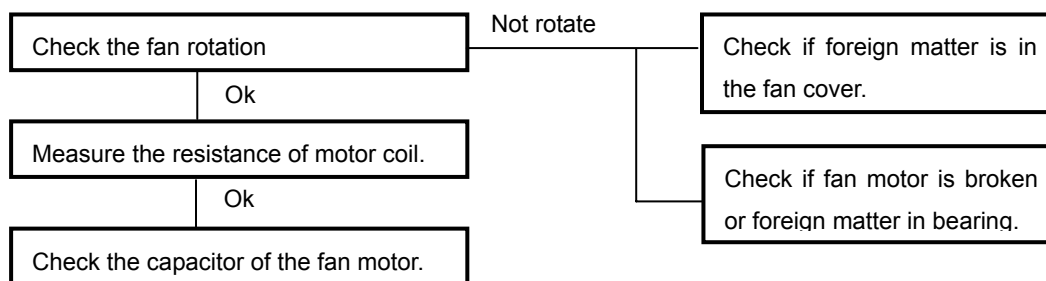
8.3.1 Only indoor fan does not work.



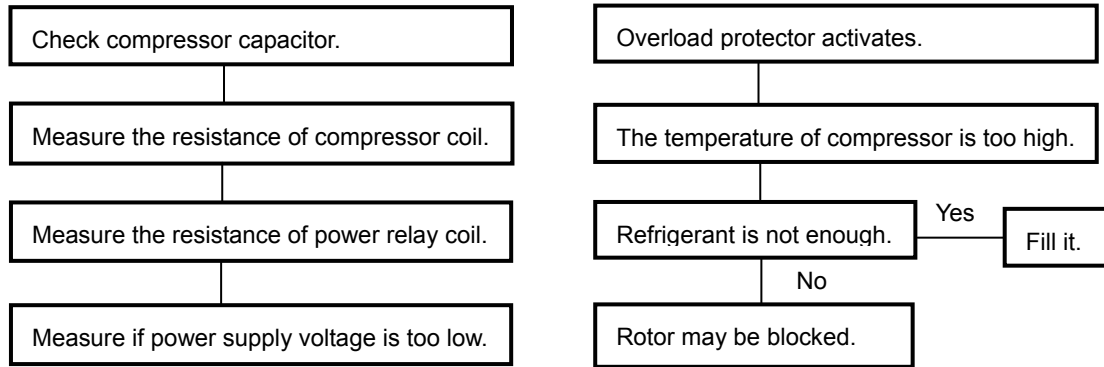
8.3.2 Only louver motor does not run.



8.3.3 Only outdoor fan motor does not run.

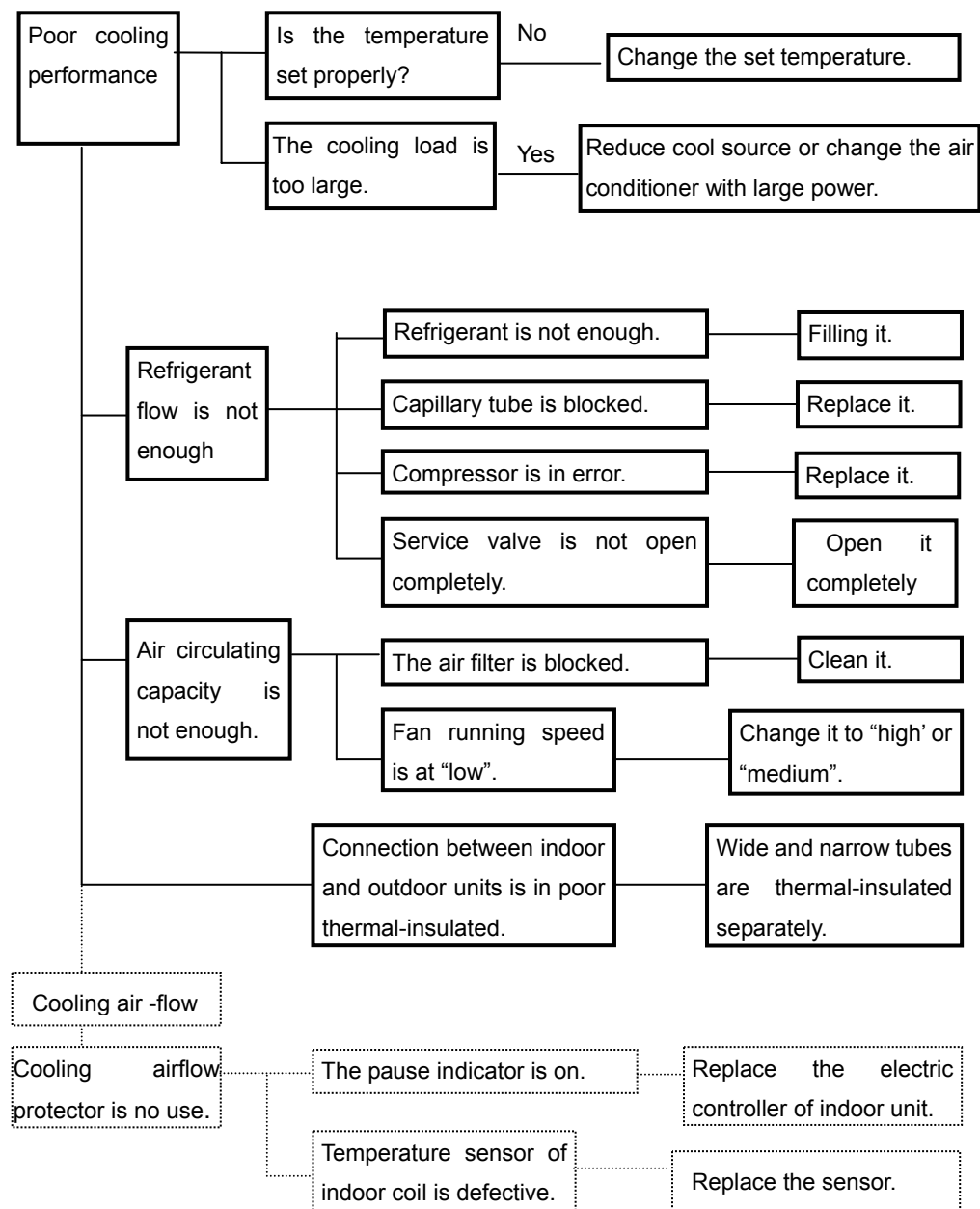


8.3.4 Compressor does not run.



8.4 Air conditioner operates, but abnormalities are observed

8.4.1 Poor cooling phenomena.



8.4.2 Over cooling or heating.

Check the set temperature.

8.5 Sensor is defective (Check reference 3.4.8)

9. Checking Electrical Components

9.1 Measure insulation resistance

The insulation is in good condition if the resistance exceeds $2\text{ M}\Omega$.

9.1.1 Power supply wires

Clamp the ground pins of the power plug with the lead clip of the insulation resistance tester and measure the resistance by placing a probe on either of the power wires. (Fig. 1)

Then measure the resistance between the ground wire and the other power wire. (Fig. 1)

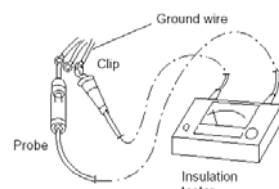


Fig. 1

9.1.2 Indoor unit

Clamp an aluminum plate fin or copper tube with the lead clip of the insulation resistance tester and measure the resistance by placing a probe on each terminal screw on the terminal plate. (Fig. 2)

Note that the ground line terminal should be skipped for the check.

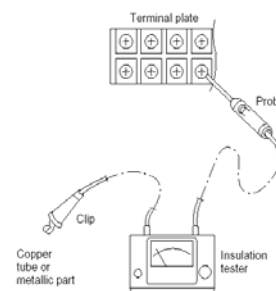


Fig. 2

9.1.3 Outdoor unit

Clamp a metallic part of the unit with the lead clip of the insulation resistance tester and measure the resistance by placing a probe on each terminal screw where power supply lines are connected on the terminal plate. (Fig. 2)

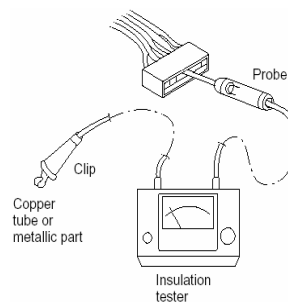


Fig. 3

Note:

Refer to electric wiring diagram.

If the probe can't enter the poles because the hole is too narrow then use a probe with a thinner pin.

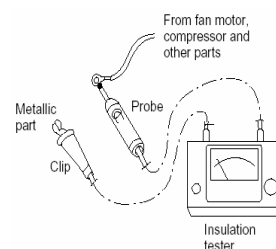


Fig. 4

9.1.4 Measurement of Insulation Resistance for Electrical Parts

Disconnect the lead wires of the desired electric part from terminal plate, capacitor, etc.

Similarly disconnect the connector. Then measure the insulation resistance. (Fig. 3 and 4)

9.2 Checking continuity of fuse on PCB Ass'y

Remove the PCB ass'y from the electrical component

box. Then pull out the fuse from the PCB ass'y. (Fig. 5)

Check for continuity using a multimeter as shown in Fig. 6

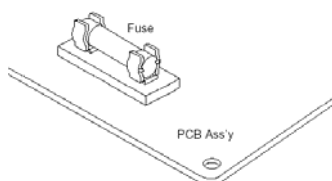


Fig. 5

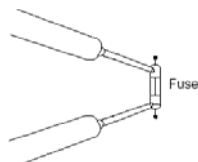


Fig. 6

9.3 Checking motor capacitor

Remove the lead wires from the capacitor terminals, and then place a probe on the capacitor terminals as shown in Fig. 7. Observe the deflection of the pointer setting the resistance measuring range of the multimeter to the maximum value.

The capacitor is "good" if the pointer bounces to a great extent and then gradually returns to its original position.

The range of deflection and deflection time differ according to the capacity of the capacitor.

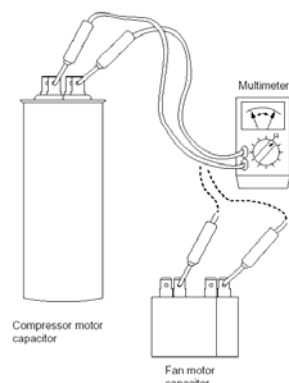


Fig. 7

